



**GOVERNMENT OF INDIA
MINISTRY OF RAILWAYS**

**INSPECTION CHECK LIST
FOR
MULTIPURPOSE TRACK TAMPING MACHINE
(UNIMAT COMPACT -M)**

REPORT NO. TM- 105

DECEMBER - 2006

**RESEARCH DESIGNS & STANDARDS ORGANISATION
LUCKNOW- 226 011.**

Name & designation of Inspecting Official :
 Date of inspection :
 Machine no. :
 Base station :

ITEMS TO BE CHECKED

S. No	Item	Description	Conditions
1.	Oil/Water Level in Tank / Container		
i)	Hydraulic oil tank	Shell Tellus-68 or equivalent	Ok/Less
ii)	Radiator	Coolant	Ok/Less
iii)	ZF gear box	API CF4 15W 40	Ok/Less
iv)	Diesel tank	HSD oil	Ok/Less
v)	Distribution gear box	SAE -90 or equivalent	Ok/Less
vi)	Engine lube oil	15 W40 API CF4 or equivalent	Ok/Less
vii)	Axle gear boxes	SAE -90 or equivalent	Ok/Less
viii)	Compressor oil	15 W40 API CF4 or equivalent	Ok/Less
ix)	Vibration shaft main bearing	Shell Tellus-68 or equivalent	Ok/Less
x)	Hydraulic oil tanks for tamping unit arm bearing	Shell Tellus-68 or equivalent	Ok/Less
xi)	Hydraulic oil tanks for lubrication of guide column	Shell Tellus-68 or equivalent	Ok/Less
xii)	Air oiler	Hydraulic oil Shell Tellus-68	Ok/Less
2.	Lubrication (As per schedule)		
2.1	Tamping Bank		
i)	Pivot of Tamping tool adjusting cylinders	Greasing	Done / Not done
ii)	Tamping unit sliding bushes	Greasing	Done / Not done
iii)	35 mm pins of tamping cylinders	Greasing	Done / Not done
iv)	Bearing of rear feeler roller	15 W40 API CF4 or equivalent	Done / Not done
v)	Guide bushes of rear feeler rods	15 W40 API CF4 or equivalent	Done / Not done

S. No	Item	Description	Conditions
vi)	Guide pulley of front tightening trolley	15 W40 API CF4 or equivalent	Done / Not done
vii)	Bearing of front feeler	15 W40 API CF4 or equivalent	Done / Not done
viii)	Guide bushes of front feeler	15 W40 API CF4 or equivalent	Done / Not done
ix)	Roller of middle feeler	15 W40 API CF4 or equivalent	Done / Not done
x)	Guide rod of middle feeler	15 W40 API CF4 or equivalent	Done / Not done
xi)	Guide bushes of middle feeler	15 W40 API CF4 or equivalent	Done / Not done
xii)	Vibration shaft main bearing	15 W40 API CF4 or equivalent	Done / Not done
xiii)	Tamping arm bearing	15 W40 API CF4 or equivalent	Done / Not done

2.2 Lifting/Lining Unit:

i)	Clamp pivot	Greasing	Done / Not done
ii)	Lifting unit guide column	Greasing	Done / Not done
iii)	Lining rollers	Greasing	Done / Not done
iv)	Clamp carrier	Greasing	Done / Not done
v)	Lining cylinder pivot	Greasing	Done / Not done
vi)	Horizontal lifting hook guide	Greasing	Done / Not done
vii)	Vertical lifting hook guide	Greasing	Done / Not done
viii)	Longitudinal guide	Greasing	Done / Not done

2.3 Cardon Shaft:

For machines from S.no. 2000 to 2002

i)	Engine to ZF gear box	Greasing	Done / Not done
ii)	ZF to Distributor gear box	Greasing	Done / Not done
iii)	Distributor gear box to axle gear box	Greasing	Done / Not done
iv)	Axle 2 to Axle 1	Greasing	Done / Not done

For machines after S.no. 2002

i)	Engine to Distributor	Greasing	Done / Not done
ii)	Distributor to Axle 2 and Axle 1	Greasing	Done / Not done

2.4 Miscellaneous

i)	Torque arm pivot	Greasing	Done / Not done
ii)	Brake linkage	Greasing	Done / Not done
iii)	All the pivot joints of trollies	Greasing	Done / Not done
iv)	Brake lever Pivot	Greasing	Done / Not done
v)	Cord displacement assembly	Greasing	Done / Not done
vi)	Battery terminal	Petroleum jelly	Done / Not done
vii)	All locking device	Greasing	Done / Not done
viii)	Axle gear box flange cover	Greasing	Done / Not done

3. Engine:

Engine model & no:

Engine Hours:

S. No.	Item	Prevailing Conditions
i)	Starting problem	Yes/No
ii)	Condition of smoke	White/Black/Normal
iii)	Engine temperature	°C
iv)	Leakage in Head-gasket	No / Yes (Head no.)
v)	Electrolyte level in batteries	Ok/Less
vi)	Specific gravity of electrolyte (min.1.24)	Ok/Less
vii)	Self starter	Working/Not working
viii)	Compressor working	Satisfactory/ to be attended
ix)	Belt tension (min 15 mm at mid point)	Ok/Less
x)	Condition of Engine Hoses	Ok/ To be replaced
xi)	Leakage in water hoses	Yes /No
xii)	Leakage in fuel pump and injectors	Yes /No
xiii)	Battery Charging	Satisfactory/to be charged
xiv)	Condition of battery terminal	Ok/To be repaired
xv)	R.P.M. of the Engine (rated = -----)	Actual -----
xvi)	Engine Oil Pressure on load	Actual -----
(a)	At idle R.P.M. 1to 2 Kg/Sq cm	Actual -----
(b)	At rated high R.P.M. 3 to7 Kg/Sq cm	Actual -----
xvii)	Air brake pressure (Max. 3.8 bar)	Ok/Less
xviii)	Last change of lube oil filter done on	Dated Engine hrs
xix)	Last change of lube oil done on	Dated Engine hrs
xx)	Last overhauling of engine done on	Dated Engine hrs
xxi)	Last overhauling of air compressor	Dated Engine hrs
xxii)	Last calibration of injectors done on	Dated Engine hrs
xxiii)	Last calibration of injection pump done on	Dated Engine hrs
xxiv)	Last change/repair of self starter and alternator done on	Dated Engine hrs
xxv)	Last change of engine water hoses done on	Dated Engine hrs
xxvi)	Last overhauling of water pump done on	Dated Engine hrs
xxvii)	Last change of batteries done on	Dated Engine hrs
xxviii)	Engine temperature safety device	Working/not working
xxix)	Any abnormal sound	Yes/No

S.No.	Item	Prevailing Conditions
4.	Hydraulic Hoses:	
i)	General condition	Ok/Leaking (location)
ii)	Clamping	Proper / Improper
iii)	Stock of hoses with the machine	Adequate/Less
iv)	Stock of hose fittings	Adequate/Less
5.	General	
i)	Requirement of PCB if any	Part no.
ii)	Limit Switches	Working/Not working
iii)	Electrical Lights	Working/Not working
iv)	Battery charging system	Working/Not working
v)	Electrical gauges	Working/Not working
vi)	Last overhaul of potentiometer	Dated
vii)	Flasher light	Hours
viii)	Condition of tamping bank	Working/Not working
ix)	Tilting of Tamping Tools	Noisy/ok
x)	Actual number of tools with which the machine is working	Yes/No
xi)	Leakage in hydraulic systemNos
xii)	Water separator	Yes/No
xiii)	Headlight and tail light	Working/Not working
xiv)	Braking System	Ok /To be attended
xv)	Condition of brake shoes	Ok /To be attended
xvi)	Clearance between Brake shoe and wheel (Approx. Min 3 mm)	Satisfactory/ To be replaced
xvii)	Thickness of brake shoe (Min. Approx. 13 mm at any point)	Actual.
xviii)	Condition of Machine working tools (spanner set etc.)	Ok/Less
xix)	Hydraulic oil temperature	Satisfactory/Unsatisfactory
xx)	Condition of oil coolers	°C
xxi)	Track lifting roller height	Clean/Clogged
xxii)	Last change of servo valve filter	OK/ To be adjusted
xxiii)	Last change of proportional valve filter	Dated
xxiv)	Last change of suction filter	Engine hrs
xxv)	Last change of return filter	Dated
xxvi)	All log books field properly	Engine hrs
xxvii)	Last overhaul of Shock absorber	Dated
xxviii)	Warning device	Engine hrs
		Working/Not working

S.No.	Item	Prevailing Conditions
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6.0 Pneumatic

- | | | |
|-----|---|---------------------|
| i) | Last change/overhaul of Air unloader | Dated
Engine hrs |
| ii) | Last overhauling of water separator and air oiler | Dated
Engine hrs |

7.0 Safety Item

- | | | |
|------|---|--------------------|
| i) | Safety equipment as per Annexure-I | Complete/Deficient |
| ii) | Working of locking indicator of different units | Ok/not ok |
| iii) | Competency certificate of the Operator | Current/Expired |

8.0 Block Working:

- | | | |
|------|---|---------------------|
| i) | Location of the block | Km/TP |
| ii) | Pre & post tamping operations | Being done/Not done |
| iii) | Duration of block | Hours |
| iv) | Quantity of work | |
| v) | Condition of ballast | Cacked/Clean |
| vi) | Depth of clean cushion (min. required 150 mm) | |

9.0 Staff:

- | | | |
|------|----------------------------------|------------------------------------|
| i) | Strength of Staff | Full/Deficient |
| ii) | Group performance | Excellent /V.good/Good/
Average |
| iii) | Cost awareness | Excellent /V.good/Good/
Average |
| iv) | Safety awareness | Excellent /V.good/Good/
Average |
| v) | Staff due for medical | |
| vi) | General condition of the machine | Excellent /V.good/Good/
Average |
| vii) | Last break down | Hours/ Day |

S.No.	Item	Prevailing Conditions	
viii)	Hydraulic pressure (bars)	Rated	Actual
a)	System pressure		
b)	High pressure system for squeezing		
ix)	Accumulator pressure (bars)		
x)	High 85 bar		Actual
xi)	Working 85 bar		Actual
xii)	Air pressure Approx. 7 bar		Actual
xiii)	ZF oil pressure (12 - 14 bars)		Actual
xiv)	ZF oil temperature (80 - 110°C)		Actual
10.	Pending maintenance schedule and reasons		
11.	Availability of spares and tools as per Annexure-II	Full/Deficient	
12.	Any other remark by the Inspecting Officer		

(Signature of Inspecting Officer)

Name:

Designation:

Date:

List Of Safety Tools

Sl. No.	Description	Qty
1.	Detonators	1 box
2.	HS flags (red)	2 Nos
3.	HS Flag (green)	1 No
4.	HS lamps	2 Nos
5.	Chain & pad lock	1 set
6.	Terfor (2 t capacity)	1 No
7.	25t jack with traverser	1 No
8.	Crow bars	4 Nos
9.	Wooden blocks off sizes	8 Nos
10.	Portable control phone	1 No
11.	Walkie –Talkie set	1 No
12.	Banner flag	2 Nos
13.	Skids	4 Nos
14.	First aid box	1 No

List of Spares and Tools For Emergency

Sl. No.	Description	Qty
Engine:		
1.	Fuel filter	1 Set
2.	Lube oil filter	1 Set
3.	Air cleaner	2 Set
4.	Radiator hoses	1 Set
5.	Injector pipes	1 Set
6.	`V' belts	1 Set
7.	Fuel flexible hoses	1 Set
Tamping Unit:		
1.	Piston for squeezing cylinder	2 Set
2.	Gland bush for squeezing cylinder	2 Set
3.	Piston Locking Screw	2 Nos
4.	Buffer stop	2 Nos
5.	Tamping unit Up / Dn cylinder piston rod	1 No
6.	Tamping tool (2W.81.418)	8 Nos
7.	Tamping tool (W .37 .1320)	8 Nos
8.	Tamping tool bolts	8 Nos
9.	Tamping tool cap	8 Nos
10.	Tamping tool bolt (G30, 42)	8 Nos
11.	Tamping depth transducer chord	8 mtrs
12.	Carrier tamping depth transducer	1 No
13.	35 mm pin with steel bush, nut & washer	1 No
14.	Squeezing cylinder piston rod	1 No
15.	Grub screw	2 Nos
16.	Gear ring for vibration coupler	1 No
17.	Tamping tool key	6 Nos
18.	Tool tilting cylinder	1 No
19.	Bolt (W.31.133A)	2 Nos
20.	Bolt (CU.37.632)	2 Nos
21.	Rubber ring (W.33.83)	6 Nos
Hydraulic:		
1.	Seal set for all hydraulic cylinders	1 set
2.	Proportional filters	1 No
3.	Servo filters	2 Nos
4.	ZF in-line filter	1 No
5.	Hydraulic suction filter	1 Set
6.	Hydraulic return filters	1 Set
7.	Hydraulic hoses 2781-4 with crimped fitting	5 mtrs
8.	Hydraulic hoses 2781-6 with crimped fitting	5 mtrs

Sl. No.	Description	Qty
9.	Hydraulic hoses-2781-8 with crimped fitting	5 mtrs
10.	Hydraulic hoses 2781-10 with crimped fitting	5 mtrs
11.	Hydraulic hoses 2781-12 with crimped fitting	5 mtrs
12.	Hydraulic hoses 2781-16 with crimped fitting	5 mtrs
13.	Hydraulic hoses 2781-20 with crimped fitting	5 mtrs
14.	Hydraulic hoses 1503-24	6 mtrs
	Electrical:	
1.	PCB EK813	1 No
2.	PCB EK132	1 No
3.	Relay ELT- 7002/S4	2 Nos
4.	Relay ELT-663	2 Nos
5.	Fuses 4A	4 Nos
6.	Head light & working light bulbs	2 Each
7.	Versine transducer carrier	1 No
8.	Versine transducer chord	8 mtrs
	Miscellaneous:	
1.	Track lifting roller	1 No
2.	Chord wire 2 mm	40 mtrs
3.	Pneumatic hose 6.3 mm	10 mtrs
4.	Pneumatic hose 12.5 mm	05 mtrs
5.	Brake shoes	8 Nos
6.	Brake cylinder seal	1 No

ACKNOWLEDGEMENT

Following officers and staff have made their valuable contribution in preparation of Inspection Check List of Multipurpose Tamping Machine (Unimat Compact-M).

Railway

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3. " V.K. Paswan JE//II/TMC/NER

RDSO

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